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Robert's Projects

My various projects that may be of interest to others. **Dedicated to my brother Stan, Apr 16, 1955- Dec 4, 2010**

Monday, February 22, 2010

Root Cellar

We decided that our little farm needed a root cellar to store our produce in. For those unfamiliar with the term, a root cellar is an underground room that acts like a natural refrigerator, maintaining temperatures in the mid 30's F in the winter and mid 50's in the summer.

Step one: Dig a hole in the ground. We are fortunate to have a local gravedigger who is a real artist with a backhoe. He can carve a hole with straight sides almost within an inch of what you ask for.

Step two, pour a concrete footer. Then start laying blocks. About 320 went into this 8 x 8 foot cellar.

Almost finished here. Now, for the fun part, pouring a concrete roof. A simple flat slab wouldn't do, for you want condensation to run off to the sides. So, I created a plywood from with an arched top. The arch would also create a stronger roof. It also created a very strong form.

I built the form in the shop, then dismantled it.
The arches are 1/2 inch plywood pressed into dadoed grooves in the 2x4's. This created an extremely strong structure.

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Root Cellar
We decided that our little farm needed a root cellar to store our produce in. For those unfamiliar with the term, a root cellar is an u...

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Satisfied with the form I reassembled it on the root cellar walls.

A nice snug fit, supported by 3 vertical 2x4's on each side. (Not shown in the picture are 8 pieces of 1/2" plywood approximately 6" x 23". These were installed after the plywood sheets were added. They are used as extra reinforcing ribs by wedging them between the plywood sheets and the top of the 2x4's.) Next, the plywood, a sheet of plastic and lots of 1/2 rebar. Lots of rebar. Rebar is cheap, so why not? If this were a flat 4 inch slab, the calculated load rating is around 250 pounds/square foot. More then enough. But it is arched, and up to 5 inches thick. Also the rebar extends into the walls a foot, and are cemented in place. Not sure what the load rating is now, but it is certainly more than adequate.

18 half inch rebars on 8 inch centers. Strong enough! Next, add a perimeter to the form and pour concrete. About 4,000 pounds worth. I expected at least a little deformation of my form, for all that weight was being borne by my 5 arches, but there was none! Impressive.
Not taking any chances, I did not enter the cellar until I was confident the concrete was fully cured.
Removing the form from inside was not difficult, for it was designed for easy disassembly and re-use.

A view of the top before the entrance was completed and the cellar covered with 2 feet of earth. The wood at the rear is covering the ends of the rebar to prevent injury. They will be part of the reinforcement for the entrance-way.
I poured the roof in 3 sections, for that is the most concrete I can handle working alone. The seams are nearly invisible from below, and are waterproof. It was not difficult creating the arch in the top using standard concrete. The radius of the top arch is about 6 inches larger than below.

The arched ceiling is as glossy as a counter top, thanks to the plastic sheet I laid over the plywood.
See light reflecting off ceiling in picture below left.
Below Right: Add stairs and doors at top and bottom, and you have a fine root cellar, ready for lots of fruits and vegetables. Currently we are storing apples, carrots and potatoes, and we are pleased with the results.
One of the two 4 inch vents can be seen in the corner. The other is in the opposite corner.

To save labor and materials, I built the stairway with half of it on a foundation at the floor level, and the other half

stove
ve Co. "Kodiak"
primary source of
uilt stove is made

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One thing this lathe sorely needed was an automatic carriage feed stop, for forgetting to disengage the feed can lead to disaster. Disass...

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When my brother Stan fell ill, all my projects came to a halt. However, Stan would not want me to stop. While I'll never again use the...

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If you are familiar with pole-barn style construction, you know that they are relatively inexpensive, and go up fast. Usually a matter of d...

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I'm working on a gear reduction mod for my Harbor Freight Mini Lathe. I had three primary requirements for my design. First, that it...

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With the popularity of online shopping today, one would think that the Receivador would come back in vogue. Ever hear of a Receivador? Ne...

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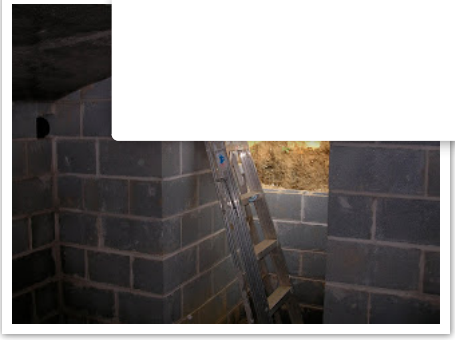
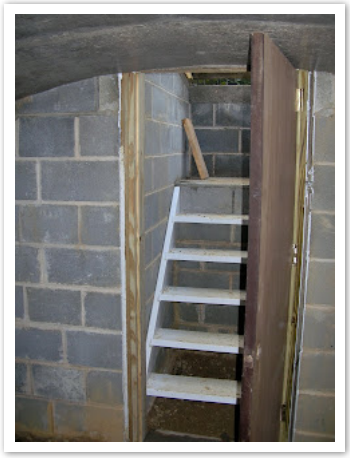
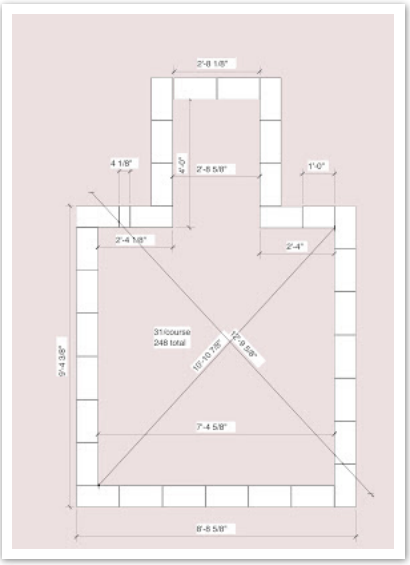


This project took a few months of evenings after work over the summer. It was cooler then, and the mortar did not dry too fast. All concrete and mortar, about 8,000 pounds in all, was either mixed with a small mixer, or by hand.





Here is a drawing of the block layout. In order to center my stairwell, I had to cut some blocks into two pieces, a 12 inch piece, and a 4 inch piece. That is because my interior width is 88 inches. If you make your width 96 inches, you will not have to do this. A wet tile saw cuts through concrete blocks with ease. I have used mine to cut many blocks, including the angled pieces that form the arched tops of the walls. Since the saw can only cut about 1/2 inch deep, you make a cut on each side. The blocks will easily split then by driving a chisel into the cut. Make gentle taps, while moving the chisel along the cut and they will break cleanly. You can see how good the cuts are in the pictures of the walls before the roof was poured.

Here is a picture of a very similar cellar. He used a higher arch, which is something I would do if I had to do it all over again, for condensation does not readily run to the sides of my flatter arch. He was very conservative and used 28 vertical supports. I used only 6. His roof weighed 5,000 pounds wet vs. my 4,000 pounds, therefore his supports were holding only 250 pounds each, while mine were holding 670 pounds. However, his ceiling was much higher than mine, and his 96 inch supports would be more prone to bending under the load than my 65 inch supports. His wood arches are on 16 inch centers, while mine are on 24 inch centers. However, I have a "backbone" made from a 2x4 running along the top, and 2 rows of plywood rectangles fitted in between my wood arches. He tarred his sides, I did not. To tar or not is determined by how wet your ground is. For more info see: http://campfire.theoildrum.com/node/5596

Other topics that I have that may be of interest:

A solar hot water heater. This has performed far beyond my expectations, even in winter. If you can find a used system, like I did, it will pay for itself in only a few years.

Rion Greenhouse. An easy to assemble greenhouse kit that has proven to be durable in high winds and heavy snow. It is now 5 year sold, and has held up well.

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Insulating and
interior in a bu

Posted by Rob

103 comments:

Unknown October 20, 2012 at 3:58 AM

Great job!

Reply

Anonymous October 20, 2012 at 8:02 AM

Thanks so much for the detailed descriptions! We will be adding you to our "watch" list. Looking forward to reading about your other projects. My hubbie was excited as he wants to build a similar design (root cellar).

Reply

JJ October 20, 2012 at 3:19 PM

That is awesome! Wish I didn't live in base housing

Reply

Anonymous October 20, 2012 at 6:50 PM

This. Just. Rocks!
Great job!

Reply

Steve October 20, 2012 at 7:04 PM

Great pictures with details. We have an existing cellar, but are planning to build somewhere else in the future. This is a great blueprint for what to do.

Thanks.

Steve in Central CA

Reply

Anonymous October 21, 2012 at 4:10 PM

Very nice.

How is runoff handled from the elements coming into the entry stairwell?

Reply

Replies

Robert October 22, 2012 at 7:01 AM

There is an exterior door, much like a basement entry door. Having two doors is very helpful in providing additional insulation.

Anonymous December 10, 2012 at 11:34 AM

What's the chance of having a root cellar in the panhandle of Florida, has anybody had luck in this part of the country, our ground never gets very cold and the humidity is always high? Also we are totally in sand, or at least 6' down.

Anonymous January 25, 2013 at 10:13 PM

It depends on how close you are to the water table. Southern states have a lot of problems with basements in general and the water level. In the sand I would imagine you would have to lay down a solid base of rock once you dug out a whole. You could then pour concrete on that rock layer. Better make it pretty thick and tamp it so you avoid settling problems with the sand.

Anonymous September 15, 2013 at 6:09 AM

I built inground swimming pools in fla,all sand;you don't have to use rock in the bottom but did to put a deadline pipe in it,to pump water out;from the outside.as far as sides go,get roll of

SuvPMAhUF2IMKHQBBA4QQFghMMAs&usg=AFQjCNG9hV3Z7JYO1D6PnmhInKDY3mO4vg&sig2=KT4Q1J-7-gT419ZK0JX1dQ

Unknown May 24, 2016 at 12:44 PM

https://www.google.com/url?sa=t&source=web&rct=j&url=http://www.dtic.mil/dtic/tr/fulltext/u2/a225108.pdf&ved=0ahUKEwjV3NbSuvPMAhUF2IMKHQBBA4QQFghMMAs&usg=AFQjCNG9hV3Z7JYO1D6PnmhInKDY3mO4vg&sig2=KT4Q1J-7-gT419ZK0JX1dQ

Unknown May 24, 2016 at 12:44 PM

Here's a link to a very interesting read regarding waterproofing. https://www.google.com/url?sa=t&source=web&rct=j&url=http://www.dtic.mil/dtic/tr/fulltext/u2/a225108.pdf&ved=0ahUKEwjV3NbSuvPMAhUF2IMKHQBBA4QQFghMMAs&usg=AFQjCNG9hV3Z7JYO1D6PnmhInKDY3mO4vg&sig2=KT4Q1J-7-gT419ZK0JX1dQ

Reply

Stock October 22, 2012 at 5:14 AM

What is the average temp in your cellar?

How do you control water and snow melt in the step area.

g2prep@att.net

Reply

Robert October 22, 2012 at 6:58 AM

The temperature can be as low as the upper 30's in the dead of winter, and in the 60's an the heat of summer. I need to add some insulation to the ceiling, for the two feet of dirt on top has proven to be inadequate. I get considerable condensation on the ceiling in winter
There is an outer door, much like a basement exterior door.

Reply

Replies

Anonymous July 5, 2014 at 1:58 PM

robert is than any way to add a vent pipe to relieve the condensation?
very, very nice job.

Anonymous April 22, 2017 at 9:34 PM

Concrete is porous. The condensation could be attributed to there being cold joints in the ceiling. I would bet that you are seeing moisture at each of the joints where you stopped placing concrete, as you said you did the roof in three separate placements. One continuous placement could've eliminated this. Unless you used a Waterstop along each joint. Something to consider for future projects.

Reply

Jutta October 22, 2012 at 7:12 PM

Wonderful discription. We in Northern California get a fair amount of rain. Any suggestions on how to waterproof the walls, the floor and the door?

Reply

Replies

Unknown May 31, 2013 at 6:40 AM

Jutta my husband is a contractor and has always said if you want to water proof exterior walls use black tar paper and emulsion on the outside of the walls he has done this with basements that leaked he dug around the perimeter of the wall and put his emulsion and black paper on exterior of wall then put earth back in place, no leaks

Reply

Dene

Very n

Reply

Replies

Robert November 4, 2012 at 6:17 PM

It has about 2 feet of earth over it. That helps insulate the roof, and supports vegetation (mostly weeds) that shield the cellar from summer sun.

Reply

James November 4, 2012 at 12:55 PM

just out of curiousity what was the cost of building this?

Reply

Replies

Robert November 4, 2012 at 6:26 PM

About $1,000. Concrete blocks were $1 ea at the time, and I used about 320. About $500 for concrete and mortar, and the remainder for rebar, wood, etc.

Diana November 30, 2012 at 11:41 AM

Great information, thank you. That seems like a very easy and fairly inexpensive project to do, so you can maximize those garden surpluses.

Reply

John November 30, 2012 at 11:45 AM

How about using a Bilko door for the outside entrance. To me that is more secure and likely to keep moisture out.
I would also tar the cement blocks from foundation to top.
As tight as the design in you should have allowed some air flow using 4" pvc pipes out the sides on both ends with curved down facing and with wire mess to prevent rodents from entering.

Reply

Replies

Lloyd K Lewis March 20, 2014 at 7:31 PM

We have had and used cellars for as far back as I can remember. Ours have been made of everything from adobe to river run rock, concrete, cinderblocks and sandstone. We never vented to the sides, always through the roof. I used 6 inch pvc on each end of the last one I did and used a standard roof cap to keep the birds insects etc out I screened with a fine aluminum mesh. Also ran in electricity for light and just in case an outlet for a refrigerator or freezer. Also made bins for carrots, potatoes, squash, melons. They keep really good if covered with sand or straw.

Reply

carlye828 November 30, 2012 at 11:47 AM

This is great, I would love to build one. But, how is it kept from flooding in heavy rains?

Reply

Anonymous November 30, 2012 at 1:33 PM

I have a levee due to digging a pond. The extra dirt is on the east and south side. I have thought about digging into this to make a root cellar or a storage cellar. QUESTION! Which side of your land should you build such a cellar?

Reply

Anonymous November 30, 2012 at 1:39 PM

I have a levee that has excessive dirt on the west and south side of my pond. Would this be a good place to build a cellar for storage? Seems like a root cellar should be on the north or west. This part has lots of shade. New at this. As you can tell. lol

Reply

Anony

Is ther
unexp
with o

Reply

Carolina Food Storage January 21, 2013 at 4:37 PM

This is a great design. We are in the process of planning our own root cellar and this has helped a great deal! PS...love your Polish Eagle :)

Reply

Anonymous January 23, 2013 at 7:50 PM

could you this as a tornato shelter?

Reply

Replies

Anonymous January 25, 2013 at 10:34 PM

Yes this could be a shelter but not a very good one. If you made the roof thicker to withstand more weight then you'd be a lot better off. (Think worst case, a vehicle gets thrown on top of the shelter, you want it to be able to hold the weight of that crashing vehicle.) Also if you plan to use you cellar as a storm shelter you'd also want to use a good heavy duty solid door that open INWARDS into the shelter. That way if the stair well gets filled with debris you will still be able to open the door and escape without getting trapped. Also during a tornado low pressure is achieved and and inward opening door is only held closed tighter during the event. :)

Anonymous March 15, 2015 at 9:00 AM

Also adding another 'exscape' hatch at other end of the structure would be needed. Just in case the front one is 100 % blocked by a house car etc. (Or what i would want)

Reply

Anonymous January 25, 2013 at 9:46 PM

I plan on having a contractor build me a root cellar but not to store vegetables, and only half that size to be used as a 'tornado shelter'.

Reply

Unknown January 25, 2013 at 9:50 PM

I wanted a root cellar, but when we were first constructing our home, we discovered ground water at around 18 inches down. That immediately changed our minds on a basements also. It does dry out in the summer time, but in my husband's shop during the fall through springtime, his automotive pit turns into a "lap" pool with clear clean water if they sump pump is not engaged. We have a seasonal pond in the back corner of our property... which I can only "hear" in the spring when the frogs converge. Say all that, I'm jealous, we could build it but ALL the EXTRA cost to make it water tight would be non-productive financially.

Reply

Unknown January 25, 2013 at 10:23 PM

great details and plans for your root cellar. I would like to pin this to my "on the ranch" pinterest board. May I?

Reply

Dottie January 25, 2013 at 10:32 PM

We've had a root cellar for the past 25 or so years. Works great. It rains a lot here in the winter. Once in a while the cellar can flood. What do you do for drainage? Something you have to remember is an issue...

Reply

Anonymous January 25, 2013 at 10:33 PM

Thanks for sharing this, it was very well thought out and I really enjoyed reading your play-by-play.

Reply

Anonymous January 26, 2013 at 12:32 AM

and yo

Reply

Unkno

love the details you've provided!!! due to our high water table, it makes me sad this probably wouldn't work on our property

Reply

Charlene January 26, 2013 at 6:15 PM

Great article with lots of good information. Two questions: How deep is your frost line? How high is your water table? Thanks!

Reply

Replies

Robert January 27, 2013 at 5:34 AM

This area is considered a 3 foot frost level. However, I rarely see frost below 2 feet. I'm on a hill, so my water table is about 100 feet down. My well is 300 feet deep. I am fortunate to have well drained soil, which is good for my peach trees. It also has kept my septic system maintenance free for over 30 years.

Reply

Ready in OR January 26, 2013 at 6:31 PM

if you had a simple gravel and pipe french drain system around perimeter piped to garden nearby, I believe you would have no runoff issues at all. or, to be even more prepped, run your runoff first thru a sand filter and then second or third stage into a holding cistern buried next to root cellar for additional water storage...trying to prep on a budget in OR..

Reply

Unknown February 11, 2013 at 2:57 PM

I find your projects very helpful. We will be acquiring some land to homestead and I have been looking for a simple DIY root celler. Look forward to seeing your other projects.

Reply

Anonymous February 27, 2013 at 6:22 AM

Did you consider burying a steel shipping container? How do you think that idea would compare to your project?
My wife is pushing very hard to have me construct a root cellar this summer.

Great website. Please tell more about your fund raising.
/roger, pullman, wa

Reply

Replies

Anonymous January 3, 2015 at 1:33 PM

do not use a steel container under ground,the sides will crush inward over time,and will rust all over making it very weak . it is unsafe!! use block.do your research and you will see containers are cheap but unsafe under ground.

Reply

Robert February 28, 2013 at 10:15 AM

No, I never considered a shipping container. That would be considerably larger than my needs, and while I haven't priced shipping containers, likely much more expensive. Just excavating that big a hole would have cost a lot more. Then you would need to hire a crane or something to lower the container into the hole.
For me, that takes it outside of what I consider a DYI project. By contrast, I did everything but dig the hole. I used my own truck to pick up the materials I used, rather than have them delivered.
The funds request is to help cover the cost of hiring full time aids to look after my 92 year old mother. That costs $4,000 or more a month.

Reply

Replies

it is something that needs to be considered. Aside from the excavation and placement costs, purchasing a container of any quality can run in the neighborhood of $3,500. There are some amazingly creative things being done with container conversions for studios, mother-in-law / guest units, offices, stogare, vacation property cabins, etc.... so an expanded market for used containers has developed that makes them more difficult to find directly from the first owner - not impossible, but more difficult. Compared to the plans Robert has shared, burying a container could be cost prohibitive. However, compared to the cost of building stick built structure for the purposes i listed, it makes them an interesting alternative.

Reply

Anonymous March 25, 2013 at 3:31 PM

Very and simple project (though actually hard labor). I like it! However, (unless I missed it) you say nothing about sealing the outside walls from moisture, seepage etc..

Reply

Anonymous March 25, 2013 at 7:11 PM

very nicely built and explained. thanks so much. would this be viable for foid storage in northeast
montana. it is below zero a good part of winter.. even spells of 60 below. (mostly due to windchill) thank you.:-)

Reply

Replies

Robert March 26, 2013 at 10:14 AM

As long as you are below your frost line, and whatever is above the frost line is well insulated, you should be OK. In my case, I rarely have frost go below two feet. In your case, Montana frost maps place your frost line at 3 -4 feet. My guess is that if you built one like mine, but went one foot deeper than I did, you should be OK. Even with my mild winters, my ceiling gets a little cold, so I'm planning to add 1 inch foam insulating board to it.

Reply

Anonymous March 25, 2013 at 7:51 PM

thank you... I have been wanting to build an underground root cellar for many years. i like to do everything myself. I will look at your plans with more detail, and let you know when i build my own! mine will be into a side of a hill though... too much ground water here.

Reply

Anonymous March 26, 2013 at 6:26 AM

Mr Robert,

How do you control mold (that black stuff is bad)? Is there a draft pipe?
Thanks

tsunamikimo@yahoo.com

Reply

Robert March 26, 2013 at 10:03 AM

Yes, there are two 4 inch vent pipes at opposite ends. Good ventilation is essential!

Reply

Ruby March 29, 2013 at 6:48 AM

A root cellar should have 5' of dirt on top for 95% temperature stabilization. To achieve 99% temperature stabilization you would need 30' of dirt on the roof. 5' of dirt could also protect from nuclear radiation fallout. 5' of dirt would be very heavy. A higher arch, more rebars, and additional concrete thickness are needed to support 5' of dirt. An arched roof is stronger than a flat roof. Rocks for drainage should be under and on the sides of the root cellar. Install a french drain. If fresh foods are to be stored, there should be three separate rooms. One for veggies that like it dryer and warmer at the entrance. The warmer entrance room might double as disaster protection for people. A second room for fruits, and a third for vegetables. Fruits and veggies let off gasses than ripen and spoil each other. Shelves should be 6 inches from the wall to allow air circulation, and preferably have air holes in shelves allowing air circulation. There should be an air vent at the floor level to

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Make a hidden door going from the first room into the second room, so that if your root cellar is found and some of your food is stolen, not all of it is stolen. Most importantly repent because you need Yahuwah the Most High's protection. If the cellar is to double as a nuclear fallout shelter allow for 3' large air supply intake/outgo opening and make a hand-powered fan to bring in air. To make a hand-powered fan make a 3'x2' frame. String wires across up and down vertically every couple inches. Place plastic flaps on hinges running side-to-side horizontally that will close as you pull a rope towards you, and open on return when you release the rope. Hinge the framed hand-powered fan to the opening of the window. Attach a rope at the bottom for pulling. Have 90 degree turn from the entrance from the window to eliminate 90% of the radiation. You need 40 cu ft of fresh air per minute per person. The minimal 4 cu ft of air/minute/person recommended by FEMA will kill you with too many people in the room. Design openings with a cover so fallout cannot fall down the air openings. Every 90 degrees the entry way turns will eliminate 90% of radiation. Have a 5' mass of dirt between the entry way and the cellar for the first 90 degree turn. 3' of dirt = 1' concrete = 2" lead for density protection from radiation. Insulation helps protect from mold-causing condensation. Put reflective material coming in from the window to bring in the light but not the radiation for any room to be inhabited for radiation protection. The window could also serve as an escape route should the door be blocked from falling trees.

Reply

Replies

Unknown September 12, 2013 at 7:26 AM

Wow I love your description and plan on printing it out for my son. Thank you so much for your info.

Reply

Anonymous August 19, 2013 at 5:25 AM

I really like your project, I see room for improvement but that is how things are built and improved. cost If you included your labor would far exceed 1000 dollars. I am currently bidding a similar project and the homeowner is expecting close to a thousand . wont and cannot be done for a grand.

Reply

Robert August 19, 2013 at 1:13 PM

That is correct. Probably more like $2,000 and up. I did not pay for material delivery, for I used my truck. Having to hire a backhoe and operator could be expensive, too. I did not record my hours, but there were many. Just bending all that rebar into a uniform curve took time. The best improvement you can make, imho, is to increase the radius of the ceiling to encourage condensation to run to the sides.

Reply

Anonymous September 13, 2013 at 6:25 PM

Are you concerned about the walls caving since there is only dirt against them and no gravel fill? Love the project and your plans are very well understood. I would live a root cellar but the engineer I am married to would make it so much more difficult to build.

Reply

Robert September 14, 2013 at 4:14 AM

No I am not concerned! For many years, 8 inch block walls were used for basement walls in houses. They would often be much deeper into the ground and longer, which would make them more prone to cave in than my root cellar. No gravel fill was used. In addition, my cellar has a steel reinforced roof with the rebars extending into the walls, which makes the whole thing very strong. It appears to me that the engineer is looking for reasons not to build it.

Reply

Replies

ImReady September 15, 2013 at 8:54 PM

I thought you poured concrete inside the block wall too. So you didn't? I'm not to sure I'd skip that. probably be OK, but, still.....I know, you were keeping the cost down.

Reply

Robert September 16, 2013 at 7:32 AM

I have concrete around the rebars that extend down into the top row of blocks. Below that the blocks are hollow. I believe any more is overkill, for it was not necessary on houses around here.

Reply

Anony

Our g
vegies inside freeze?

Reply

Replies

Robert September 19, 2013 at 6:56 PM

You need your root cellar to be substantially below your frost line. I would guess that if it half below and half above, with the upper half insulated, you will be OK. Here the official frost line is 3 feet. I rarely see frost below 2 feet, so I have been OK. I am not sure how root cellars are built in places like Minnesota, where the frost line is 5 feet.

Reply

Unknown October 14, 2013 at 4:58 AM

Wspaniała ziemianka! Prowadzę bloga o architekturze i pozwoliłam sobie skopiować zdjecia, dopisać kilka słów i oczywiście zlinkować Pana njako autora tego wspaniaego obiektu. muszę pogratulować przemyślenia sprawy i zastosowania ciekawego rozwiązania. W poście znajduje się kilka innych ziemianek - zapraszam do pooglądania i dziękuję za inspirację!!
(post z Pana budowlą m.in. jest na - www.panidyrektor.pl)

Reply

Marilyn February 13, 2014 at 8:50 AM

Robert - we've been trying to decide how to build a root cellar - we live on a hill with a house about 2/3rds of the way up. But when we first moved here to KY we did see the block basements that you speak of - they were used for their cisterns too (new to us - never heard about cisterns like this before). I hope to use your plans or to make one in our basement. Keep up the good work!!!

Reply

Anonymous March 20, 2014 at 5:01 PM

Just wondering as to when moisture/water etc gets in, how do you remove that? Harry Australia

Reply

Replies

Robert July 6, 2014 at 5:04 AM

My soil drains well, so water is not a problem. For root cellar purposes, you generally want high humidity. I have a pair of 4 inch vents in the side walls to keep it from being too high. For shelter purposes you would not want so much humidity. You should have more vents, and coat the outside of the blocks with tar. I have a dirt floor. A concrete floor with a moisture barrier would make it a lot drier inside.

Reply

Anonymous July 5, 2014 at 9:39 AM

got bunker?

Reply

Anonymous July 5, 2014 at 2:07 PM

robert, do you have any detailed planes for the root cellar? sure would like to get a set.
thanks.

Reply

Replies

Robert July 6, 2014 at 4:56 AM

Sorry, there are no plans. I often work with just a general concept in mind, and some crude sketches if I need them.

AnonymousDoug January 18, 2015 at 10:38 AM

isbn=9780882662909&cat=Country%20Wisdom%20BulletinHouse%20&%20Home&p=0

Reply

Anonymous July 5, 2014 at 3:55 PM

Have you made any you tube videos on your projects?

Reply

Replies

Robert July 6, 2014 at 4:54 AM

No, I haven't. It is difficult to take live video because when I begin a project, I often don't know how it will turn out! Plus, I often change things in the middle of a project if I am not satisfied. For example, I made the root cellar 8 inches wider than planned, and that is why there are the short blocks in the wall with the stairs.

Reply

Anonymous January 19, 2015 at 4:40 AM

Nice design. My caution is that you place yourself at great risk when you excavate a hole with perpendicular sides and place the spoils pile next to the edge. Keep in mind that soil weighs approximately 100lbs per cubic foot. WIthout properly sloping or shoring the edges you can be killed within a matter of seconds. If this was a commercial excavation OSHA would have cause to issue a serious violation (immediately hazardous to life) based on the photos you've posted. A five foot hole without proper safeguards can become a grave very quickly. http://www.wqow.com/story/26524699/2014/09/13/two-dead-after-soil-wall-of-a-trench-collapsed-police-say

Reply

Replies

Bigmagic February 7, 2016 at 9:35 AM

How would you go about shoring the edges of a plan like this?

Bigmagic February 7, 2016 at 9:36 AM

Do you know how you would go about shoring a project like this?

Reply

Anonymous January 28, 2015 at 11:57 PM

Speaking as someone who has built something very similar indeed, you have done a very beautiful and well crafted cellar. The blockwork is nicely done and i loved the roof. I did mine with beam and block, but i liked your sloping roof.
There is another way of doing blockwork for smaller projects which i learned after doing mine but have used it on smaller builds, if you stack the blocks dry (without mortar), and use a vibrating pole and steel reinforcement when filling the centers of the blocks, you can attain very fast but strong build.

Reply

Replies

Anonymous February 24, 2017 at 1:52 PM

Will this still make for a waterproof structure, and will it be just as strong? If no mortar is just as good as with mortar, why does anyone still use mortar?
I'm hoping to build an underground house using larger cinder blocks, but I don't know how to mortar blocks, and your method might be a good solution. Send me an email s i r d a v i d @ k t c . c o m

David Treibs February 24, 2017 at 3:03 PM

I just did some reading on another blog, and their discussion suggests that dry stacking really doesn't have any advantages, because if there are variations in the brick sizes, you will have gaps, and the structure won't be level, etc. https://permies.com/t/6562/Dry-stacked-concrete-blocks

Reply

Anony

awesc
She w

Reply

Anonymous August 9, 2015 at 5:03 PM

Did you and if so, how did you support the concrete roof? And does it get moldy in there?

Reply

Anonymous July 4, 2016 at 8:12 AM

Robert, thanks for taking to time to document your work. I just had my hole dug and plan on getting the footing poured soon. A question if I might, why did you choose the inside width dimension at 7'4 - 5/8"? I will be using 8' plywood to form the arched roof and plan on making the inside width 8'. Am I missing something? Also, mine will be 24' long.

Reply

Replies

Robert July 6, 2016 at 11:02 AM

The reason I made mine smaller than 8 feet inside is that my hole was too small. Go ahead and make yours 8 feet wide.

Reply

Anonymous July 21, 2016 at 4:11 PM

Thank you for sharing I would love to have a root cellar for my canned foods.

Reply

Anonymous November 11, 2016 at 12:38 PM

It all looks great! I like the lower roof - cannot see it once covered. Not so conspicuous. However 2x6 const instead of 2x4. The cross sections 2x6 w plywood sandwiched between 2 2x6's and glued. Makes for a very strong beam. Great plan and idea to go from. Thank You.

Reply

Replies

Anonymous January 27, 2017 at 4:13 PM

The wood is only a form for pouring the concrete roof. It is removed after the poured concrete is cured.

Reply

Troy January 6, 2017 at 10:02 AM

I was just talking to my Mother about building a root seller so I can start to can my own produce. Thank you so much for this, it gives me some great ideas.
Troy

Reply

Anonymous January 27, 2017 at 5:19 PM

My question has to do with the pouring of the roof.

When you poured your roof, you obviously also poured concrete into the holes in the concrete blocks.

How do you figure the amount of concrete you'll need, to fill those holes?

Reply

Replies

Robert January 31, 2017 at 4:41 PM

The concrete only goes down 16 inches into the blocks. Since it is a relatively small percentage of the total concrete used, I didn't make any calculations for that.

Robert January 31, 2017 at 4:41 PM

Repl

Unknown January 31, 2017 at 3:29 PM

Thanks do much for the detailed pictures and comments. We're ready to build one soon!

Reply

David Treibs February 24, 2017 at 2:44 PM

Robert, I really like what you've done.
I'm wanting to build me an underground house, that also has a floor, that is about 800-1000 square feet. I'd like to have a total of about 5' of soil/concrete on top of it. I'm thinking that 20'x40' or 20'x50' is how I will design it.
I like your idea of an arched roof, and I like it that you were able to pour it yourself. Perhaps with the size I am wanting, that is not an option for me, since my plan is so much bigger.
I like the last picture on this page, of the higher arch. How do you pour the concrete so it stays at an angle and doesn't just slough off of your slope? Do you have to build some sort of form on the top as well?

Also, how did you keep your seams on the roof waterproof between your mixes? Did you do the entire roof the same day so none of it could set before you poured on the next batch?

Reply

Replies

Robert February 25, 2017 at 6:12 AM

David, my lower arch did not need an upper form. I am not sure what the people who built the higher arch did. Since I was mixing and pouring myself, I did the rood in 3 parts. It worked out fine, without any cracks or leaks.

Reply

Unknown November 6, 2017 at 9:21 AM

I saw this a few months ago when I was figuring out how I wanted to replace the roof on an existing cellar of mine. I used the arch concept along with a few other ideas and it worked out great. I didn't trust the existing structure to support the weight (7,000 lbs in my case) so I poured a perimeter slab about 3ft wide that I could form up and set something like this on. The perimeter slab will also help keep moisture away from the walls. My cellar is 8'x10' and I went 16" high at the center and poured it 6" thick with a similar rebar. Seeing that it's been done is really helpful when brainstorming a project like this so thanks for sharing!

Reply

Pine Meadows Hobby Farm January 5, 2018 at 10:44 PM

Great project. This is the size and style I am looking to build on my homestead. Thanks for posting this.
Jerry of Pine Meadows Hobby Farm

Reply

Anonymous September 3, 2018 at 7:19 AM

How did you get on with the Planning Permission and Building Regs?

Reply

rafed October 21, 2018 at 6:33 AM

thanx for sharing your idea

Reply

Unknown October 31, 2018 at 10:56 AM

To unknown: sometimes we just have to do for ourselves and not invite government, local or otherwise, to our properties. If you are in a rural area, how would local government get wind of your 'private' root cellar?

Reply

Anonymous May 5, 2019 at 4:06 PM

you said you wanted condensation
but what do you do for runoff as a drain or if it rains hard ...
thanks.

Reply

Re

Reply

Anonymous June 14, 2021 at 8:36 AM

Robert, how deep was your concrete footer for the walls?

Reply

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